



PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference G69335MP/sgb	FOR FURTHER ACTION See Form PCT/PEAA16	
International application No. PCT/IB2004/001197	International filing date (day/month/year) 21.04.2004	Priority date (day/month/year) 23.04.2003
International Patent Classification (IPC) or national classification and IPC H01S3/09, H01S3/042		
Applicant BRIGHT SOLUTIONS - SOLUZIONI LASER... et al.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of eight sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the opinion</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 18.02.2005	Date of completion of this report 11.07.2005	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Gnugesser, H Telephone No. +49 89 2399-2526 	

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2004/001197

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This report is based on translations from the original language into the following language, which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3 and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4)
 - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1-6, 8, 10-12, 14-27	as originally filed
7, 9, 13	received on 21.02.2005 with letter of 17.02.2005

Claims, Numbers

1-22	received on 21.02.2005 with letter of 17.02.2005
------	--

Drawings, Sheets

1/3-3/3	as originally filed
---------	---------------------

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

**INTERNATIONAL PRELIMINARY REPORT
ON PATENTABILITY**

International application No.
PCT/IB2004/001197

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-22
	No: Claims	
Inventive step (IS)	Yes: Claims	1-22
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1-22
	No: Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

D1: US 6 287 298 B

From D1 (see: fig. 3 and description col. 5, line 22 - col. 6, line 60; col. 10, lines 1 - 35) the technical features defined in the preamble of claim 1. In the device of D1 type I non critical phase matching is used.

The subject-matter of claim 1 is therefrom distinguished in that

- the non-linear crystal is able to generate a second harmonic of said fundamental wavelength by **critical** type I phase matching;
- the cavity is associated to thermostating means for temperature locking said cavity and its optical elements.

These distinguishing technical features solve the following problem: design of a simple and compact laser structure for the generation of high power visible laser beams with high spatial quality.

The above distinguishing technical features are neither known nor indicated by the available prior art in order to solve the problem posed. The **critical phase matching** of claim 1 allows room temperature to be chosen for all fundamental wavelengths whereas the non-critical phase matching of the device of D1 works at a temperature of the crystal which is different for each fundamental wavelength. There is no reason for the person skilled in the art to change the configuration of the device of D1 in a way to arrive at the subject-matter of claim 1. Although made from the same crystal lattice it is to be noted that the same non-critical phase matching crystal cannot be used for critical phase matching. It is further to be noted that the above distinguishing technical features can not be considered as an obvious measure well known to the person skilled in the art. Consequently, there is no reason to develop the subject-matter of claim 1 from the available prior art without exercise of inventive step.

**INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(SEPARATE SHEET)**

International application No.

PCT/IB2004/001197

Claim 20 defines a method for generating a visible laser beam in an apparatus according to claim 1. Therefore, the subject-matter of claim 20 is also novel and involves an inventive step.

Claims 2 - 19 and 21, 22 are dependent claims which directly or indirectly refer back to claims 1 and 20 respectively. These claims are therefore novel and involve an inventive step.